

PASTURE C-FACTORS FOR ALL MISSOURI CLIMATIC ZONES

Ground Cover (%) ^{1/}	Canopy Cover (percent)									
	0	10	20	30	40	50	60	70	80	90
10 - H							.007	.005	.003	.002
10 - M						.025	.020	.015	.010	
10 - L		.137	.122	.107	.092	.077	.062	.047		
20 - H						.006	.005	.004	.003	
20 - M					.024	.020	.016	.012		
20 - L	.119	.107	.095	.083	.072	.060	.048			
30 - H					.006	.005	.004	.003		
30 - M				.021	.018	.015	.012			
30 - L	.092	.083	.074	.065	.056	.047				
40 - H				.005	.005	.004	.003			
40 - M			.019	.017	.014	.012				
40 - L	.072	.065	.058	.051	.043					
50 - H			.005	.004	.004	.003				
50 - M		.017	.015	.013	.011					
50 - L	.056	.050	.045	.039						
60 - H		.004	.004	.003	.003					
60 - M	.014	.013	.011	.010						
60 - L	.044	.039	.035							
70 - H	.004	.003	.003	.003						
70 - M	.011	.010	.009							
70 - L	.034	.031								
80 - H	.003	.003	.002							
80 - M	.009	.008								
80 - L	.026									
90 - H	.002	.002								
90 - M	.007									
100 - H	.002									

^{1/} Vigor, fertility, and production are rated as either H (high), M (medium), or L (low).

Explanation of Pasture C-Factors

RUSLE VERSION:

The Time Invariant option in the C-factor routine of DOS-RUSLE version 1.05 pre_q was used to develop C-factors for established grasses. This version was adapted for the FOCS-RUSLE release in 1997. The inputs needed in RUSLE are identified below.

PERMANENT GRASS ASSUMPTIONS:

These C-factors are for long-term or permanent grass stands. (For grasses established in recent years or as part of a crop rotation, the C-factors for perennial grass in cropland rotations should be used. Refer to page 9, Section I-(iv)-A-16, in the FOTG for rotation C-factors.)

The C-factor is for a relatively smooth sod surface where sheet and rill erosion is predictable. These values may not apply to rough surfaces such as may occur from grazing on wet soils.

The root mass in the upper 4 inches of the soil surface is 4000 pounds per acre for High vigor and productivity; 2500 pounds per acre for Medium; and 1000 pounds per acre for Low. Since these stands are more permanent than grasses grown in rotation with crops, they may be less productive and contain more weeds. Therefore, the root mass will likely be lower than when grasses in rotation are grown and managed for hay production.

COVER:

Total cover is the sum of ground cover and canopy cover not to exceed 100 percent. Ground cover occurring directly below canopy cover will be counted as ground cover.

Ground cover is any material in contact with the soil surface during rainstorms that intercepts raindrops and affects surface runoff. Ground cover includes live plant material, plant residue, and any other surface material such as gravel, stones, etc. Standing residue that comes in contact with the soil surface during a storm should be counted as ground cover.

Canopy cover is plant material, dead or alive, standing above the soil surface during rainstorms. Canopy cover intercepts raindrops but does not affect surface runoff.

ESTIMATING COVER:

The line transect method may be used to determine total cover as a percentage. Follow standard procedures established for measuring crop residue cover with the line stretched above the canopy. A “hit” occurs when canopy or ground cover occurs directly beneath a “point”. When both canopy and ground cover occur below a “point”, count this hit only as ground cover since it has the greater impact on erosion reduction. After making line transect measurements in various kinds of cover types, one should be capable of making reliable visual estimates. Periodic recalibration with the line transect method will likely be needed to maintain reliability.

VIGOR, FERTILITY, AND PRODUCTIVITY:

Plant vigor, soil fertility, and grass productivity of the permanent stand are grouped into classes of high, medium, and low for C-factor determinations.

A HIGH rating would be associated with a dense stand of sod-forming grasses of strong plant vigor, good productivity, a high level of management, adequate soil fertility and pH, and good soil quality. These C-factors are based on an average annual root mass in the upper four inches of soil equivalent to 4000 pounds per acre. Sheet and rill erosion will not be evident.

A LOW rating would be associated with a stand of grass of poor plant vigor and reproduction, poor management and low soil quality, productivity, and fertility. These C-factors are based on an average

annual root mass of 1000 pounds per acre in the upper four inches of soil. The stand would be open and contain more weeds than stands rated either medium or high. Sheet and rill erosion may be evident along with other forms of soil erosion.

A MEDIUM rating would be associated with a stand that falls between the guidelines for High and Low. These C-factors are based on an average annual root mass of 2500 pounds per acre in the upper four inches of soil.

ROUGHNESS:

The soil surface associated with permanent grass is assumed to be relatively smooth. A random roughness value of 0.3 was used in RUSLE.

SURFACE COVER FUNCTION, *b* VALUE:

A *b* value of 0.25 was used. This value is associated with permanent grass cover on medium and coarse textured soils where interrill (sheet) erosion would dominate if the soil was bare. This *b* value corresponds with LS-factors in Table1, Section I-(iv)-A-15, FOTG.

CANOPY FALL HEIGHT:

The average fall height from the canopy used was 0.1 feet. Fall height is the average distance a raindrop falls to the soil surface after being intercepted by the canopy.